

**ANNUAL REPORT OF THE DEPARTMENT OF NATURAL RESOURCES ON
ACT 51 123rd SESSION OF THE SOUTH CAROLINA
GENERAL ASSEMBLY (2019)**



Wild Turkey Resources in South Carolina 2022



May 2023

EXECUTIVE SUMMARY

Act 51 of the 123rd Session of the South Carolina General Assembly largely rewrote wild turkey hunting laws in South Carolina. It established new turkey season frameworks, imposed a limit of one gobbler during the first 10 days of the season, a daily limit of one gobbler, and it imposed a first-time fee on turkey tags. Act 51 also requires that “The department shall provide an annual report on the wild turkey resources in South Carolina to the Chairman of the Senate Fish, Game and Forestry Committee and the Chairman of the House Agriculture and Natural Resources Committee.” The following is offered by the department to fulfill that requirement.

The popularity and status of the Eastern wild turkey in South Carolina drives the South Carolina Department of Natural Resources (SCDNR) Wildlife Section's ongoing commitment to conduct pertinent research, surveys and monitoring related to the state's wild turkey population. Due to the importance of turkeys as a state resource, SCDNR believes that accurately assessing the productivity, harvest, as well as hunter participation in turkey hunting, is key to the management of this species.

Agencies and legislators are faced with the daunting task of designing and recommending regulatory frameworks that maximize hunter satisfaction while ensuring that populations are sustainable. Proposed changes in turkey-related laws and regulations should have foundations in biology, therefore, the population dynamics associated with annual reproduction and hunting mortality must be monitored and reported. Similarly, when issues arise that do not involve biological parameters, it is important to have information related to turkey hunter activities afield because they also form an important basis for managing wild turkeys.

The objectives of annual survey and monitoring are to obtain valid estimates of; (1) the statewide spring gobbler harvest, (2) the harvest of gobblers in the constituent counties, (3) hunting effort related to turkeys, (4) information on hunters’ opinions of the turkey resource and other aspects of turkey hunting, and (5) annual reproduction and recruitment of wild turkeys in South Carolina.

Additionally, wildlife biologists and managers in South Carolina and throughout the range of the Eastern wild turkey have observed and reported declines in productivity, likely attributable to large-scale declines in nest success and brood survival. Likewise, declines in turkey abundance, and corresponding declines in spring harvest of males have been noted. Collectively, these findings are of considerable concern to state wildlife agencies, like SCDNR, charged with ensuring sustainable populations of wild turkeys.

To quantify, South Carolina has experienced declines in turkey productivity since 1988. Average recruitment prior to 1988 was 3.5 poults per hen. Average recruitment since then has been 2.1, representing a 40 percent decrease in average recruitment. Coincidentally, the turkey harvest has decreased over 40 percent since it peaked in 2002.

The declines, here and in other states, have precipitated numerous research projects over the last decade. This research has been conducted by several universities across the Southeast, with assistance and primary funding from state wildlife agencies. SCDNR has and continues to support and participate in

these studies. Over time, the agency hopes to gain a better understanding of the factors influencing turkey declines, and methods, techniques, and management strategies to slow or reverse this trend.

This research entails a comprehensive assessment of reproductive ecology and chronology of male and female wild turkeys. This includes studies of timing, location and success of nesting and brood rearing activity. Projects also investigate survival, behavioral and movement data, demographic parameters, gobbling activity, and descriptions of mate selection and parentage for populations of wild turkeys. Summaries of current research can be found within this report.

Turkey harvest, hunter participation and hunter effort are estimated by means of an annual mail survey that involves a single mail-out. Hunters are surveyed randomly by selecting 35,000 individuals who received a set of 2022 Turkey Transportation Tags which are required to hunt turkeys in South Carolina.

During the 2022 spring season it is estimated that a total of 11,884 adult gobblers and 1,604 jakes were harvested for a statewide total of 13,488 turkeys (Table 1). This figure represents a 4.2 percent decrease from the estimated harvest in 2021 (14,065). Recent turkey harvest figures remain well below levels from the past reflecting decreased numbers of turkeys likely due to ongoing poor recruitment of poults into the population. This trend appears to be a regional situation and has been called the “southeast turkey decline” by biologists and managers.

Wild turkey productivity is assessed by observations of reproduction and associated survival of offspring being recruited into the population. This measure of young entering the population based on the number of hens in the population is the Total Recruitment Ratio (TRR). This annual index is the most practical measure of productivity because it considers successful hens, unsuccessful hens, and poult survival. Recruitment of four or more poults per hen is considered excellent, three is good, two is fair and considered a break-even point, and one or less poults per hen is poor.

During 2022 statewide Total Recruitment Ratio was 1.3, matching the all-time low seen in 2013. For hens that successfully raised a brood, average brood size was 3.5 poults, a number that has remained consistent over time. However, the driving factor in the low productivity is the high percentage of hens with no poults at all by late summer. Sixty-four percent of hens observed during the 2022 survey had no poults and that figure has averaged 56% the last five years.

The current estimated population of wild turkeys in South Carolina is approximately 94,000. This is based on a hen to gobbler ratio of 1.61:1 derived from the 2022 Summer Turkey Survey, the estimated harvest of 13,488 gobblers during spring 2022 and a 40 percent male harvest rate. Male harvest rate is based on long-term average disparity in hen to gobbler ratio which can only be explained by differential mortality between the sexes, in this case attributed to hunter harvest.

Additional details and discussion on the annual harvest and productivity surveys are found within this report.

2022 SC WILD TURKEY HARVEST REPORT

Introduction

Ranking only behind white-tailed deer in popularity among hunters, the Eastern wild turkey is an important natural resource in South Carolina. The 2022 Turkey Hunter Survey represents the South Carolina Department of Natural Resources (SCDNR), Wildlife Section's ongoing commitment to conduct pertinent research related to the state's wild turkey population. The primary objectives of this survey research were to obtain valid estimates of; (1) the statewide spring gobbler harvest in 2022, (2) the harvest of gobblers in the constituent counties of the state, and (3) hunting effort related to turkeys. Information on hunter's opinions of the turkey resource and other aspects of turkey hunting are also presented.

Due to the importance of turkeys as a state resource, SCDNR believes that accurately assessing the harvest of turkeys, as well as hunter participation in turkey hunting, is key to the management of this species. Proposed changes in turkey-related laws and regulations should have foundations in biology, therefore, the population dynamics associated with annual hunting mortality cannot be ignored. Similarly, when issues arise that do not involve biological parameters, it is important to have information related to turkey hunter activities afield because they too form an important basis for managing wild turkeys.

Since the inception of the Statewide Turkey Restoration and Research Project (Turkey Project) the methods used to document the turkey harvest have changed. Historically, turkey harvest figures were developed using a system of mandatory turkey check stations across the state. This system yielded an actual count of harvested turkeys and was, therefore, an absolute minimum harvest figure. Shortcomings in this system included deterioration in compliance, complaints from hunters regarding the inconvenience of check stations, etc. The requirement to physically check harvested turkeys in South Carolina was eliminated following the 2005 season at which time post season hunter surveys were implemented. The 2021 spring season marked the inaugural year of SC Game Check and electronic harvest reporting for turkeys. With this, SCDNR has two sources of harvest data for comparison. It should be noted that although reporting is mandatory, noncompliance by some hunters should be expected. Rates of noncompliance will be estimated using the post season survey and due to noncompliance, figures obtained from the survey will likely be higher than those from electronic harvest reporting.

Survey Methodology

The 2022 Turkey Hunter Survey represented a random mail survey that involved a single mail-out. The questionnaire for the 2022 Turkey Hunter Survey was developed by Wildlife Section personnel (Figure 1). The mailing list database was constructed by randomly selecting 35,000 individuals who received a set of 2022 Turkey Transportation Tags which are required to hunt turkeys in South Carolina. Data entry was completed by Success Staffing, LLC, Seabrook, South Carolina. Results from the mail survey were corrected for nonresponse bias using data collected by Southwick Associates, Fernandina Beach, Florida using a Computer Assisted Telephone Interview program (CATI). Statistical analysis was conducted using Statistix 10 (Analytical Software, Tallahassee, FL).

Results and Discussion

Turkey Harvest

During the 2022 spring season it is estimated that a total of 11,884 adult gobblers and 1,604 jakes were harvested for a statewide total of 13,488 turkeys (Table 1). This figure represents a 4.2 percent decrease from the estimated harvest in 2021 (14,065). Recent turkey harvest figures remain well below levels from the past reflecting decreased numbers of turkeys likely due to ongoing poor recruitment of poults into the population. This trend appears to be a regional situation and has been called the “southeast turkey decline” by biologists and managers.

The percentage of jakes in the 2022 harvest was approximately 11 percent based on reports through SC Game Check and the post season survey as well. This is a relatively low percentage of jakes in the harvest but higher than the 7 percent in 2021. The increase in jake harvest is likely related to slightly better recruitment during the summer of 2021 which would increase the availability of jakes in the spring of 2022.

The 2022 spring season was the second year of SC Game Check and electronic harvest reporting for wild turkeys. Therefore, SCDNR now has two sources of harvest data for comparison. There were 8,844 turkeys reported through SC Game Check. Although reporting is mandatory there will always be lack of compliance by some proportion of hunters. To estimate noncompliance a question was included on the hunter survey asking hunters who indicated they killed a turkey(s) “Did you report your harvest to SC Game Check?”. Results indicate that 32 percent of hunters admit to not reporting their harvest. Using this as a correction factor increases the figure that should have been reported through SC Game Check to approximately 11,700 turkeys. Therefore, there is about a 13 percent discrepancy between the reported harvest and the harvest estimated by the Turkey Hunter Survey. Finally, there are some questions related to turkeys being reported on the preseason youth turkey hunting weekends. Only 165 birds were reported which seems very low. If that is the case, then the reported harvest would draw closer to the harvest estimated by the survey.

Harvest Per Unit Area County Rankings

Comparisons can be made between turkey harvests from the various counties in South Carolina if a harvest per unit area is established. Harvest per unit area standardizes the harvest among counties regardless of the size of individual counties. One measure of harvest rate is the number of turkeys taken per square mile (640ac. = 1 mile²). When considering the estimated turkey habitat that is available in South Carolina, the turkey harvest rate in 2022 was 0.6 gobblers per square mile statewide (Table 2). Although this harvest rate is not as high as it once was, it should be considered good and is like other Southeastern states. The top 5 counties for harvest per unit area were Spartanburg (1.1 turkeys/mile²), Union (1.1 turkeys/mile²), Bamberg (1.1 turkeys/mile²), Fairfield (1.1 turkeys/mile²), and Williamsburg (1.0 turkeys/mile²) (Table 2).

Turkey Harvest Rankings by County

Total turkey harvest is not comparable among counties because there is no standard unit of comparison, i.e., counties vary in size and are, therefore, not directly comparable. However, some readers may be interested in this type of ranking. The top 5 counties during 2022 were Williamsburg, Fairfield, Berkeley, Orangeburg, and Horry (Table 3).

Number of Turkey Hunters

Even though all individuals receiving a set of Turkey Transportation Tags were eligible to hunt turkeys, only 50 percent indicated that they actually hunted turkeys. Based on this figure, approximately 47,824 hunters participated in the 2022 spring turkey season, a 7 percent decrease from 2021 (51,492). The small decrease in hunter numbers in 2022 may be related to people pursuing activities that were not as available in 2021 due to lingering COVID-19 restrictions. Counties with the highest estimates for individual hunters include Fairfield, Newberry, Berkeley Union, and Chester (Table 4).

Hunter Effort

For the purposes of this survey hunter effort was measured in days with one day being defined as any portion of the day spent afield. Turkey hunters averaged approximately 8.8 days afield during the 2022 season (Table 4). Successful hunters averaged significantly more days afield (10.2 days) than unsuccessful hunters (6.0 days). Extrapolating to the entire population of turkey hunters yields a figure of 287,263 total days of spring gobbler hunting, a 7 percent decrease from 2021 (308,551 days). This decrease is similar to the decrease in hunter numbers. The top 5 South Carolina counties for overall days of turkey hunting during 2022 were Fairfield, Union, Berkeley, Newberry, and Laurens (Table 4) with all but Berkeley being in the top 5 counties in 2021.

Turkey Harvest by Period of Season

Gobbling by male wild turkeys occurs primarily in the spring and is for the purpose of attracting hens for mating. Therefore, spring turkey hunting is characterized by hunters attempting to locate and call gobbling male turkeys using simulated hen calls. With respect to both biology and quality hunting, the timing of the spring gobbler season should consider three primary factors: peak breeding, peak gobbling, and peak nest initiation. Considering these factors, seasons can be set to afford hunters the best opportunity to hunt during the best time (i.e., peak gobbling) without inhibiting reproductive success of hens.

A recent multi-year nesting study conducted in the lower coastal plain indicates that on average, hens do not initiate nesting until April 9. Gobbling studies conducted simultaneously to the nesting studies indicate peak gobbling occurs the first 10 days of April. The peak in gobbling is believed to coincide with nest initiation by hens because gobbling increases in response to decreased hen availability due to commencement of nesting activities.

The 2022 season marked the third year of a return to two spring turkey season frameworks in South Carolina. In Game Zones 1 and 2, which encompass the piedmont and mountains the season is now April 1 to May 10, whereas, in Game Zones 3 and 4 located in the coastal plain the season is March 22 to April 30. Based on the research, the April 1 season start date coincides more closely with the onset of nesting and peak gobbling. This should provide for improved reproductive success by hens because gobblers are not harvested too early, and it should also lead to improved hunting success because gobblers are not accompanied by as many hens due to onset of nesting. On the other hand, the March 22 season start date is nearly 3 weeks prior to peak nest initiation and prior to peak gobbling as well. That being the case, considerations should be given to potential effects on reproduction due to excessive early removal of males and decreased hunter success due to decreased gobbling and hunters competing with hens.

If seasons are set appropriately, the greatest proportion of turkeys should be harvested during the first week or 10 days of the season because increasing numbers of hens should be egg-laying or incubating resulting in gobblers that are naïve and more responsive to hunters' calls. Harvest by period of season demonstrates that the timing of the April 1 opening date affords higher turkey harvests as most turkeys are harvested during the 10 days following the April 1 opening date (Figure 4).

When broken-out by specific season frameworks the results are similar. In areas where the season begins March 22, only 33 percent of the total harvest was accounted for during the first 10 days of the season (Figure 5). This is likely because late March is the time of peak breeding and males respond to hunters' calls less because hens are available. Hunters refer to this as gobblers being "henned-up." On the other hand, 46 percent of the harvest occurred during the first 10 days of the season in areas where the season begins April 1 (Figure 6). This is because by April 10 a significant number of hens are involved in nesting activities leaving gobblers "lonely" and more receptive to hunters' calls. These same trends were apparent prior to 2016 when there was split season in South Carolina with one framework beginning March 15 and the other April 1.

Hunting Success

For determination of hunting success only those individuals who hunted turkeys were included in the analysis and similarly, success was defined as harvesting at least one turkey. Overall hunting success in 2022 was 29 percent (Figure 7). Unlike deer hunting which typically has high success, turkey hunting can be an inherently unsuccessful endeavor, relatively speaking.

The statewide bag limit in South Carolina is 3 gobblers. Obviously, most successful hunters harvest only one or two birds. However, it is interesting to note the relative contribution to the total harvest of turkeys by the few hunters who harvest 3 birds. Ironically, the percentage of hunters taking 3 birds was only 2 percent, however, this small percentage of hunters harvested an estimated 22 percent of the total birds taken in the state (Figure 8). Finally, based on reports to SC Game Check, hunters from 39 states, the District of Columbia, and Canada reported a turkey harvest. However, nonresidents comprised only 9 percent of the overall harvest in 2022.

Hunter Opinion Regarding Turkey Numbers

As has become customary, the 2022 Turkey Hunter Survey asked participants to compare the number of turkeys in the area they hunt most often with the number of turkeys in past years. Participants were given 3 choices: increasing, about the same, or decreasing. Approximately 45 percent of hunters indicated that the number of turkeys in the area they hunted most often was about the same as in past years. A higher percentage of hunters (42 percent) believed that the turkey population was decreasing than increasing (12 percent). On a scale of 1 to 3 with 1 being increasing, 2 being the same, and 3 being decreasing, the overall mean rating of 2.3 suggests that hunters viewed the turkey population as decreasing. The opinion among hunters that the turkey population is decreasing has been consistent the last few years and this opinion reached an all-time high in both 2021 and 2022.

Turkeys Shot but not Recovered

Harvesting game signals the end of a successful hunt and although most hunters do a good job of preparing their equipment and mental state, it goes without saying that a certain percentage of game is

shot or shot at and not killed or recovered. This point is no different when turkey hunting.

To estimate the prevalence of errant shots at turkeys, the 2022 Turkey Hunter Survey asked hunters to indicate the number of turkeys that they “shot but did not kill or recover during the 2022 season in South Carolina.” Approximately 10 percent of hunters indicated that they shot but did not kill or recover at least one turkey in 2022 (5 percent in 2021). There were approximately 47,824 turkey hunters in 2022 meaning that approximately 4,700 turkeys were shot or shot at and not killed or recovered. Therefore, approximately 26 percent of the total turkeys shot at were not killed or recovered. These results have been consistent since this type of data have been available with the long-term average of birds “shot at but not killed or recovered” about 22 percent for the last decade.

This data is certainly not indicative of “dead and unrecovered turkeys,” however, some percentage of the 4,700 turkeys that were shot at did eventually die. Although shot shells for turkeys have become increasingly sophisticated, accurate, and lethal it is a fact that the pattern of a shotgun is relatively broad and contains hundreds of pellets. Therefore, a “clean miss” is not as clear-cut for turkeys compared to other big game like deer where there is typically a single projectile. Additional research is needed on this topic.

Turkey Harvest in the Morning vs. Afternoon

The typical spring turkey hunt is characterized by attempting to locate a gobbling bird prior to or just after sunrise. Once a gobbler is located most hunters position themselves as close as they can to the gobbler without scaring it away. Various types of callers that mimic the sounds of wild turkeys are then used to attempt to call the gobbler into gun range. This technique of locating a gobbling bird, setting up, and calling is repeated as necessary.

Traditionally, spring turkey hunting was primarily carried out during the first few hours of the day. As the popularity of turkey hunting has increased, many hunters now hunt in the afternoon as well. Gobblers are generally not as vocal in the afternoon, but can be stimulated to gobble using the various turkey calls, particularly late in the afternoon near areas where turkeys frequently roost. Additionally, it is now common for hunters to set up on food plots, often in blinds, using decoys in areas that turkeys frequent for feeding and loafing in the afternoon.

To gain a better understanding of the distribution of harvest with respect to time of day, the 2022 Turkey Hunter Survey asked hunters to identify the number of birds harvested in the morning compared to the afternoon. Results indicate that approximately 78 percent of gobblers were harvested in the morning compared to 22 percent in the afternoon. This coincides with data reported through SC Game Check. This data may be useful if discussions arise concerning the relative importance of morning compared to afternoon harvest of gobblers in the spring. These results have been consistent since this type of data has been available with the long-term average of birds shot in the afternoon about 24 percent for the last decade.

Turkey Harvest on Private vs. Public (WMA) Land

To gain an understanding of the relative importance of the turkey harvest on private versus public (WMA) land, the 2022 Turkey Hunter Survey asked hunters how many birds they took on the respective types of land. Data from both the survey and reports through SC Game Check indicate that

approximately 91 percent of birds are taken on private land and 9 percent on public (WMA) land. Interestingly, public land comprises only about 7 percent of the turkey habitat in the state. Therefore, although a relatively small proportion of the total harvest occurred on public land, it slightly outperformed what would be expected based on available habitat.

With electronic reporting of harvested wild turkeys through SC Game Check now required, harvest figures for individual WMA's are available for the first time (Table 5). Based on these reports, 188 jakes and 637 adult gobblers were harvested for a total of 825 turkeys taken on the various WMAs in 2022. As previously discussed, although reporting is mandatory, 32 percent of hunters admit to not reporting their harvest. With this in mind, an estimate of turkeys harvested on WMAs would increase to approximately 1,089.

Use of Male "Strutter" Decoys

With the decline in turkeys in recent years there is considerable discussion related to the factors contributing to this decline. Although ongoing low recruitment is thought to be the primary factor, many believe that changes in turkey hunting techniques has made hunters more efficient. With the increased sophistication and popularity of turkey decoys many believe that the use of male strutter decoys is a contributing factor. The belief is that these decoys make harvesting mature gobblers easier and by removing more adult males reproductive success may be affected. There has been discussion of prohibiting the use of these decoys in South Carolina and other states.

To assess this issue the following question was included on the 2022 Turkey Hunter Survey: "Do you use a male strutter (full or partial) decoy when turkey hunting?". Responses indicate that approximately 23 percent of hunters use strutter decoys. Cross-referencing other statistics indicates that hunters who use strutter decoys (1) have the same success rate, (2) harvest the same number of turkeys, and (3) spend the same amount of time per harvested turkey compared to hunters who do not use strutter decoys.

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Table 1. Estimated statewide turkey harvest in South Carolina in 2022.

County	Acres*	Square	Gobbler	Jake	Total	Percent	Harvest Rates	
		Miles	Harvest	Harvest	Harvest	Jakes	Ac/Turkey	Turkey/Mi. ²
Abbeville	223,113	349	161	49	210	23.3	1,062	0.6
Aiken	500,546	782	193	24	217	11.1	2,307	0.3
Allendale	216,455	338	193	16	209	7.7	1,036	0.6
Anderson	219,068	342	137	99	236	41.9	928	0.7
Bamberg	196,573	307	322	8	330	2.4	596	1.1
Barnwell	281,764	440	120	18	138	13.0	2,042	0.3
Beaufort	147,441	230	64	41	105	39.0	1,404	0.5
Berkeley	567,530	887	564	49	613	8.0	926	0.7
Calhoun	190,584	298	193	8	201	4.0	948	0.7
Charleston	288,732	451	419	16	435	3.7	664	1.0
Cherokee	156,664	245	120	24	144	16.7	1,088	0.6
Chester	300,589	470	290	66	356	18.5	844	0.8
Chesterfield	372,478	582	209	24	233	10.3	1,599	0.4
Clarendon	298,087	466	225	33	258	12.8	1,155	0.6
Colleton	502,666	785	362	41	403	10.2	1,247	0.5
Darlington	286,228	447	153	24	177	13.6	1,617	0.4
Dillon	214,069	334	96	9	105	8.6	2,039	0.3
Dorchester	302,717	473	209	24	233	10.3	1,299	0.5
Edgefield	246,543	385	193	24	217	11.1	1,136	0.6
Fairfield	384,607	601	580	58	638	9.1	603	1.1
Florence	397,888	622	411	41	452	9.1	880	0.7
Georgetown	399,638	624	378	16	394	4.1	1,014	0.6
Greenville	294,257	460	249	41	290	14.1	1,015	0.6
Greenwood	204,400	319	137	33	170	19.4	1,202	0.5
Hampton	324,840	508	249	24	273	8.8	1,190	0.5
Horry	533,336	833	443	58	501	11.6	1,065	0.6
Jasper	309,889	484	137	17	154	11.0	2,012	0.3
Kershaw	360,485	563	209	24	233	10.3	1,547	0.4
Lancaster	266,382	416	249	8	257	3.1	1,037	0.6
Laurens	317,916	497	257	83	340	24.4	935	0.7
Lee	220,106	344	233	16	249	6.4	884	0.7
Lexington	280,742	439	48	14	62	22.6	4,528	0.1
McCormick	212,021	331	217	83	300	27.7	707	0.9
Marion	216,907	339	161	24	185	13.0	1,172	0.5
Marlboro	281,271	439	80	8	88	9.1	3,196	0.2
Newberry	317,761	497	322	66	388	17.0	819	0.8
Oconee	284,348	444	169	33	202	16.3	1,408	0.5
Orangeburg	504,516	788	540	49	589	8.3	857	0.7
Pickens	219,926	344	177	24	201	11.9	1,094	0.6
Richland	340,121	531	233	16	249	6.4	1,366	0.5
Saluda	192,173	300	104	24	128	18.8	1,501	0.4
Spartanburg	265,939	416	378	83	461	18.0	577	1.1
Sumter	338,968	530	274	16	290	5.5	1,169	0.5
Union	258,111	403	378	66	444	14.9	581	1.1
Williamsburg	513,851	803	782	41	823	5.0	624	1.0
York	276,650	432	266	41	307	13.4	901	0.7
Total	14,028,896	21,920	11,884	1,604	13,488	11.9	1,040	0.6

95% Conf. Interval for harvest (+-) 1,066 (+-) 368 (+-) 1,133

* Acreage shown represents the acreage of forested land and acreage of row crops considered to be significant turkey habitat within each county.

Table 2. County rankings based on turkey harvest per unit area in South Carolina in 2022.

County	Acres*	Square Miles	Gobbler Harvest	Jake Harvest	Total Harvest	Percent Jakes	Harvest Rates	
							Ac/Turkey	Turkey/Mi. ²
Spartanburg	265,939	416	378	83	461	18.0	577	1.1
Union	258,111	403	378	66	444	14.9	581	1.1
Bamberg	196,573	307	322	8	330	2.4	596	1.1
Fairfield	384,607	601	580	58	638	9.1	603	1.1
Williamsburg	513,851	803	782	41	823	5.0	624	1.0
Charleston	288,732	451	419	16	435	3.7	664	1.0
McCormick	212,021	331	217	83	300	27.7	707	0.9
Newberry	317,761	497	322	66	388	17.0	819	0.8
Chester	300,589	470	290	66	356	18.5	844	0.8
Orangeburg	504,516	788	540	49	589	8.3	857	0.7
Florence	397,888	622	411	41	452	9.1	880	0.7
Lee	220,106	344	233	16	249	6.4	884	0.7
York	276,650	432	266	41	307	13.4	901	0.7
Berkeley	567,530	887	564	49	613	8.0	926	0.7
Anderson	219,068	342	137	99	236	41.9	928	0.7
Laurens	317,916	497	257	83	340	24.4	935	0.7
Calhoun	190,584	298	193	8	201	4.0	948	0.7
Georgetown	399,638	624	378	16	394	4.1	1,014	0.6
Greenville	294,257	460	249	41	290	14.1	1,015	0.6
Allendale	216,455	338	193	16	209	7.7	1,036	0.6
Lancaster	266,382	416	249	8	257	3.1	1,037	0.6
Abbeville	223,113	349	161	49	210	23.3	1,062	0.6
Horry	533,336	833	443	58	501	11.6	1,065	0.6
Cherokee	156,664	245	120	24	144	16.7	1,088	0.6
Pickens	219,926	344	177	24	201	11.9	1,094	0.6
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Dorchester	302,717	473	209	24	233	10.3	1,299	0.5
Richland	340,121	531	233	16	249	6.4	1,366	0.5
Beaufort	147,441	230	64	41	105	39.0	1,404	0.5
Oconee	284,348	444	169	33	202	16.3	1,408	0.5
Saluda	192,173	300	104	24	128	18.8	1,501	0.4
Kershaw	360,485	563	209	24	233	10.3	1,547	0.4
Chesterfield	372,478	582	209	24	233	10.3	1,599	0.4
Darlington	286,228	447	153	24	177	13.6	1,617	0.4
Jasper	309,889	484	137	17	154	11.0	2,012	0.3
Dillon	214,069	334	96	9	105	8.6	2,039	0.3
Barnwell	281,764	440	120	18	138	13.0	2,042	0.3
Aiken	500,546	782	193	24	217	11.1	2,307	0.3
Marlboro	281,271	439	80	8	88	9.1	3,196	0.2
Lexington	280,742	439	48	14	62	22.6	4,528	0.1
Total	14,028,896	21,920	11,884	1,604	13,488	11.9	1,040	0.6

95% Conf. Interval for harvest

(+/-) 1,066 (+/-) 368 (+/-) 1,133

* Acreage shown represents the acreage of forested land and acreage of row crops considered to be significant turkey habitat within each county.

Table 3. County rankings based on total turkeys harvested in South Carolina in 2022.

County	Acres*	Square Miles	Gobbler Harvest	Jake Harvest	Total Harvest	Percent Jakes	Harvest Rates	
							Ac/Turkey	Turkey/Mi. ²
Williamsburg	513,851	803	782	41	823	5.0	624	1.0
Fairfield	384,607	601	580	58	638	9.1	603	1.1
Berkeley	567,530	887	564	49	613	8.0	926	0.7
Orangeburg	504,516	788	540	49	589	8.3	857	0.7
Horry	533,336	833	443	58	501	11.6	1,065	0.6
Spartanburg	265,939	416	378	83	461	18.0	577	1.1
Florence	397,888	622	411	41	452	9.1	880	0.7
Union	258,111	403	378	66	444	14.9	581	1.1
Charleston	288,732	451	419	16	435	3.7	664	1.0
Colleton	502,666	785	362	41	403	10.2	1,247	0.5
Georgetown	399,638	624	378	16	394	4.1	1,014	0.6
Newberry	317,761	497	322	66	388	17.0	819	0.8
Chester	300,589	470	290	66	356	18.5	844	0.8
Laurens	317,916	497	257	83	340	24.4	935	0.7
Bamberg	196,573	307	322	8	330	2.4	596	1.1
York	276,650	432	266	41	307	13.4	901	0.7
McCormick	212,021	331	217	83	300	27.7	707	0.9
Greenville	294,257	460	249	41	290	14.1	1,015	0.6
Sumter	338,968	530	274	16	290	5.5	1,169	0.5
Hampton	324,840	508	249	24	273	8.8	1,190	0.5
Clarendon	298,087	466	225	33	258	12.8	1,155	0.6
Lancaster	266,382	416	249	8	257	3.1	1,037	0.6
Lee	220,106	344	233	16	249	6.4	884	0.7
Richland	340,121	531	233	16	249	6.4	1,366	0.5
Anderson	219,068	342	137	99	236	41.9	928	0.7
Dorchester	302,717	473	209	24	233	10.3	1,299	0.5
Kershaw	360,485	563	209	24	233	10.3	1,547	0.4
Chesterfield	372,478	582	209	24	233	10.3	1,599	0.4
Edgefield	246,543	385	193	24	217	11.1	1,136	0.6
Aiken	500,546	782	193	24	217	11.1	2,307	0.3
Abbeville	223,113	349	161	49	210	23.3	1,062	0.6
Allendale	216,455	338	193	16	209	7.7	1,036	0.6
Oconee	284,348	444	169	33	202	16.3	1,408	0.5
Calhoun	190,584	298	193	8	201	4.0	948	0.7
Pickens	219,926	344	177	24	201	11.9	1,094	0.6
Marion	216,907	339	161	24	185	13.0	1,172	0.5
Darlington	286,228	447	153	24	177	13.6	1,617	0.4
Greenwood	204,400	319	137	33	170	19.4	1,202	0.5
Jasper	309,889	484	137	17	154	11.0	2,012	0.3
Cherokee	156,664	245	120	24	144	16.7	1,088	0.6
Barnwell	281,764	440	120	18	138	13.0	2,042	0.3
Saluda	192,173	300	104	24	128	18.8	1,501	0.4
Beaufort	147,441	230	64	41	105	39.0	1,404	0.5
Dillon	214,069	334	96	9	105	8.6	2,039	0.3
Marlboro	281,271	439	80	8	88	9.1	3,196	0.2
Lexington	280,742	439	48	14	62	22.6	4,528	0.1
Total	14,028,896	21,920	11,884	1,604	13,488	11.9	1,040	0.6

95% Conf. Interval for harvest

(+-) 1,066 (+-) 368 (+-) 1,133

* Acreage shown represents the acreage of forested land and acreage of row crops considered to be significant turkey habitat within each county.

Table 4. Estimated number of turkey hunters, average days hunted, and total hunting effort in SC in 2022.

County	Total Harvest	Number Hunters	Avg. Days Hunted	Total Man/Days
Abbeville	210	1,265	6.4	8,128
Aiken	217	1,020	5.9	6,016
Allendale	209	601	5.7	3,416
Anderson	236	1,256	5.9	7,391
Bamberg	330	701	6.3	4,442
Barnwell	138	564	6.5	3,656
Beaufort	105	282	4.0	1,135
Berkeley	613	1,803	6.1	11,016
Calhoun	201	701	4.9	3,407
Charleston	435	1,466	5.1	7,540
Cherokee	144	628	7.3	4,602
Chester	356	1,730	5.6	9,682
Chesterfield	233	956	5.8	5,548
Clarendon	258	628	5.4	3,416
Colleton	403	1,111	5.9	6,574
Darlington	177	510	6.4	3,257
Dillon	105	300	5.4	1,624
Dorchester	233	683	6.3	4,333
Edgefield	217	1,111	5.8	6,454
Fairfield	638	2,267	6.8	15,369
Florence	452	947	6.5	6,116
Georgetown	394	1,056	5.3	5,648
Greenville	290	1,229	4.9	5,996
Greenwood	170	1,083	6.1	6,584
Hampton	273	1,111	5.6	6,166
Horry	501	1,056	6.7	7,122
Jasper	154	546	5.8	3,187
Kershaw	233	1,202	5.8	6,933
Lancaster	257	910	5.8	5,239
Laurens	340	1,693	6.0	10,180
Lee	249	655	6.9	4,522
Lexington	62	428	4.9	2,092
McCormick	300	1,111	6.6	7,361
Marion	185	564	6.2	3,496
Marlboro	88	355	5.3	1,893
Newberry	388	1,821	5.6	10,220
Oconee	202	1,065	6.8	7,251
Orangeburg	589	1,648	5.6	9,184
Pickens	201	1,202	6.2	7,451
Richland	249	1,029	4.7	4,881
Saluda	128	756	7.3	5,508
Spartanburg	461	1,584	5.8	9,154
Sumter	290	838	7.1	5,927
Union	444	1,730	7.0	12,042
Williamsburg	823	1,484	5.7	8,466
York	307	1,138	6.7	7,640
Total	13,488	47,824	5.5*	287,263

*Note - Since individuals hunt multiple counties the average number of days hunted per county varies from the average number of days individuals hunt (8.8 days).

Figure 1. South Carolina Department of Natural Resources 2022 Turkey Hunter Survey.

- 2022 South Carolina Turkey Hunter Survey**
1. Did you turkey hunt in SC this past season (2022)? 1. Yes 2. No
If you answered **No** to this question please go to question # 10.
 2. Did you harvest any turkeys in SC this past season? 1. Yes 2. No
 3. Even if you did not harvest a turkey, please record the SC counties you turkey hunted and the number of days hunted in each county this past season (2022). If you harvested turkeys please record the number of adult gobblers and jakes taken in each county. A day of hunting is defined as any portion of the day spent afield. Please do not give ranges (i.e. 5-10), rather provide absolute numbers (i.e. 5). Provide information only for yourself - not friends, relatives, or other people you may have called or guided for or hunted with. (*Jakes typically have beards less than 6", spurs less than 1/2" and longer feathers in the center of their tail fan.*)

SC Counties You Turkey Hunted	# Days Hunted	Number Turkeys Harvested
1		Adult gobblers _____ Jakes _____
2		Adult gobblers _____ Jakes _____
3		Adult gobblers _____ Jakes _____
4		Adult gobblers _____ Jakes _____

If you did not harvest any turkeys in SC this past season please go to question 8.

4. If you harvested turkeys in SC this past season, please indicate as best you can the number of turkeys killed by County and 10-day period of the season.

County of Harvest	Number of Turkeys Harvested by Time Period				
	March 22-31	April 1-10	April 11-20	April 21-30	May 1-10
1.					
2.					
3.					

5. How many turkeys did you kill in the morning _____ after 12:00 noon _____?
6. How many turkeys did you kill on **Private Land** _____ and **Public (WMA) Land** _____?
7. Did you report your harvest to SC Game Check? 1. Yes 2. No
8. How many turkeys did you shoot but not kill or recover in SC this past season? _____
9. Compared to past years, how would you describe the number of turkeys in the area that you hunted most often this spring?
Circle one 1. Increasing 2. About the same 3. Decreasing
10. Do you use a male strutter (full or partial fan) decoy when turkey hunting? 1. Yes 2. No
11. Are you a resident of SC? 1. Yes 2. No
12. If yes, which county _____

Separate and return this portion of the survey. Postage is prepaid. Please do not staple this form.



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COMPLETE YOUR
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Figure 1. continued

May, 2022

Dear SC Turkey Hunter:

Eastern wild turkeys are one of the most important game species in South Carolina. Therefore, it is important that this species be monitored for population status and harvesting activities. Wildlife resource managers require current and accurate information about wild turkey harvests to aid in successfully managing this important natural resource and to optimize future hunting potential. To obtain this needed data, the South Carolina Department of Natural Resources (SCDNR) is conducting a survey of hunters who received a set of turkey tags during spring 2022.

Although electronic reporting of harvested turkeys is now required, SCDNR will continue to survey hunters to maintain consistency, determine hunter effort, and measure other aspects of turkey hunting. You are one of a group of randomly selected hunters asked to participate in this survey. To draw accurate conclusions it is very important that you complete the survey and return it. Please take time to read each question. Even if you did not hunt or harvest wild turkeys this spring please indicate this by answering the appropriate questions and moving on to the next set of questions.

Please note that complete confidentiality will be given to you. Keep in mind that the purpose of the survey is to determine the wild turkey harvest in South Carolina and not to determine whether game laws are observed. By accurately answering the survey questions you will enable SCDNR biologists to better manage the Eastern wild turkey resource for you and other citizens of the state. Therefore, it is very important that you take a few minutes to complete this survey and mail it. Return postage is prepaid.

Results of this survey will be posted on the SCDNR web site once completed. The results from the 2021 survey can be found at: www.dnr.sc.gov/wildlife/turkey/2021TurkeyHarvest.html

Charles Ruth
Certified Wildlife Biologist
Big Game Program Coordinator

PLEASE MAIL YOUR SURVEY AFTER SEPARATING THIS HALF FROM THE SIDE ON WHICH YOUR ANSWERS HAVE BEEN ENTERED. NO POSTAGE IS NECESSARY.

If you have questions regarding this survey, please call 803-734-3886

The South Carolina Department of Natural Resources prohibits discrimination on the basis of race, color, sex, national origin, disability, religion or age. Direct all inquiries to the Office of Human Resources, P.O. Box 167, Columbia, SC 29202

22-13289



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SC DEPARTMENT OF NATURAL RESOURCES
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Figure 2. Spring wild turkey harvest in South Carolina 1982-2022. Since 2002 harvest has declined (45%) likely due to less than desirable annual recruitment (see Figure 2 below).

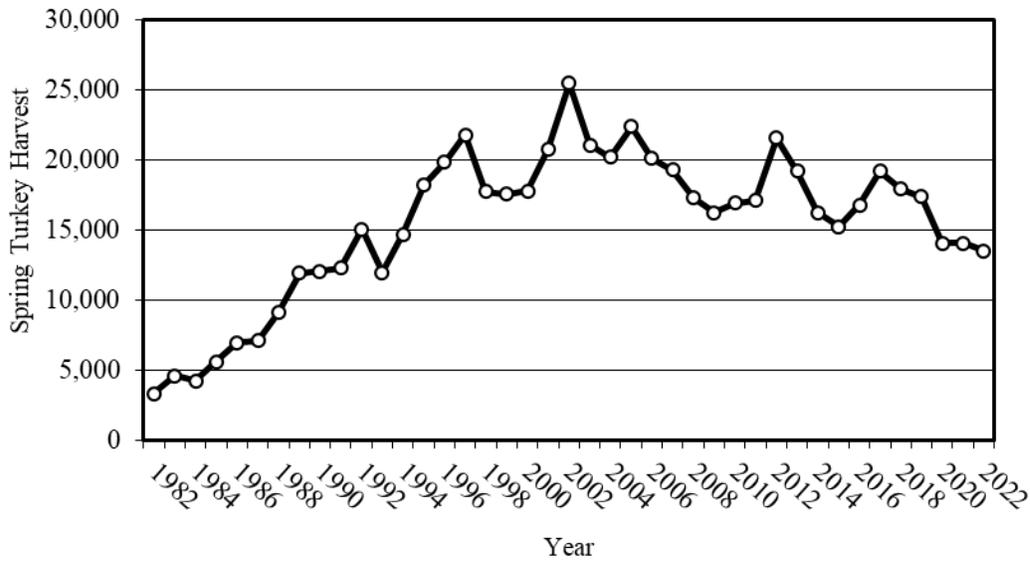


Figure 3. Summer wild turkey recruitment ratio in South Carolina 1982-2021. Note declining trend since 1988. Average recruitment prior to 1988 = 3.5. Average recruitment since 1988 = 2.1. This represents a 40 percent decrease in average recruitment.

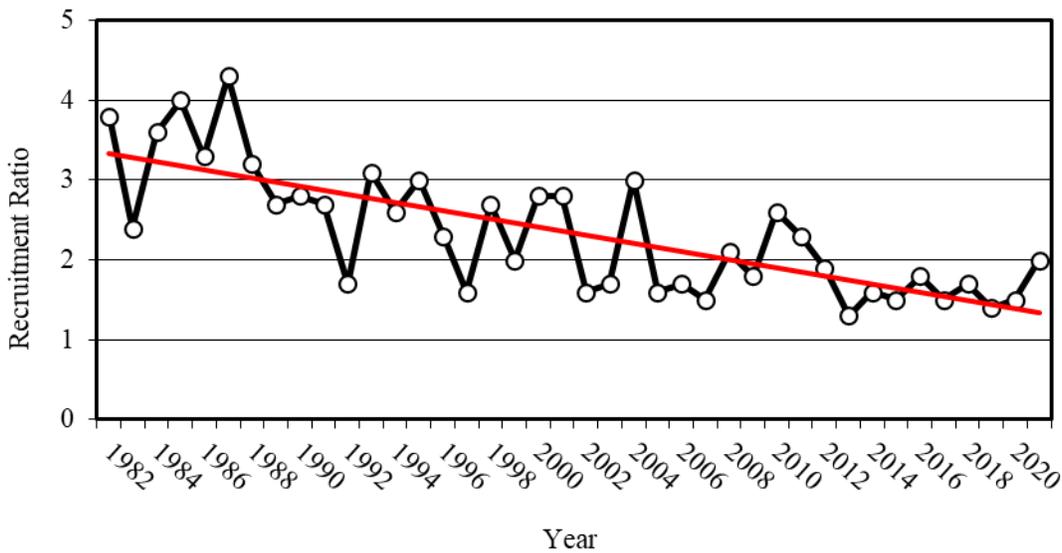


Figure 4. Percentage of gobblers harvested by period of season in South Carolina in 2022.

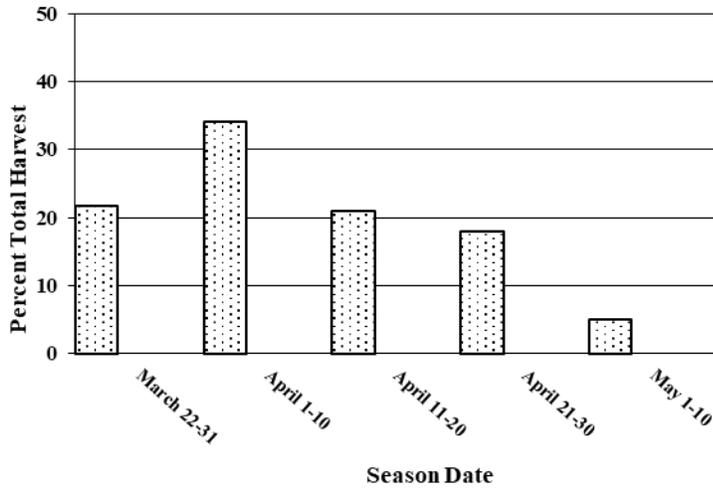


Figure 5. Percentage of gobblers harvested by period of season with March 22-April 30 framework in Game Zones 3 & 4 (coastal plain) in South Carolina in 2022.

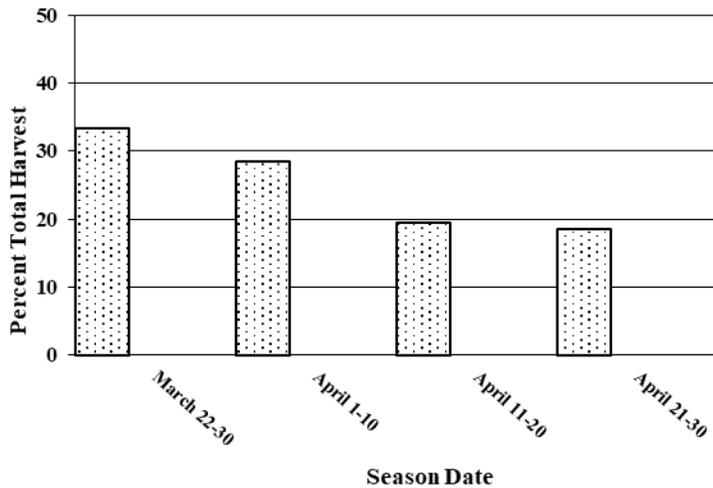


Figure 6. Percentage of gobblers harvested by period of season with April 1-May 10 framework in Game Zones 1 & 2 (piedmont and mountains) in South Carolina in 2022.

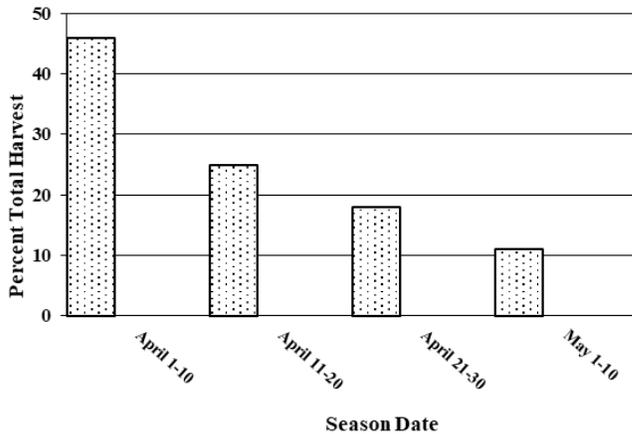


Figure 7. Hunter success during the spring turkey season in South Carolina in 2022. Overall success was 29 percent at harvesting at least one gobbler.

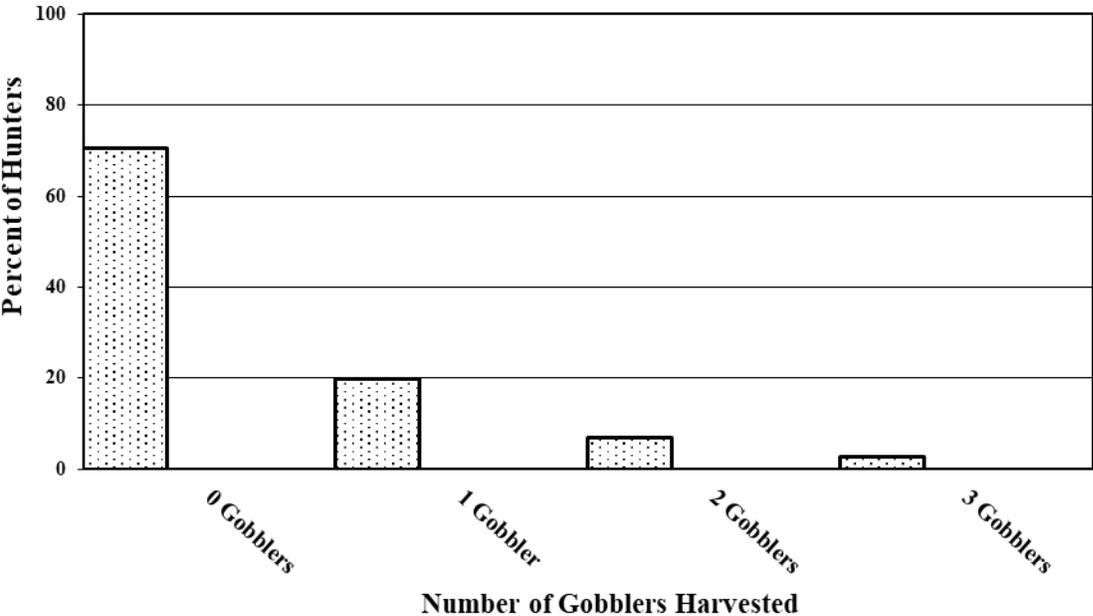
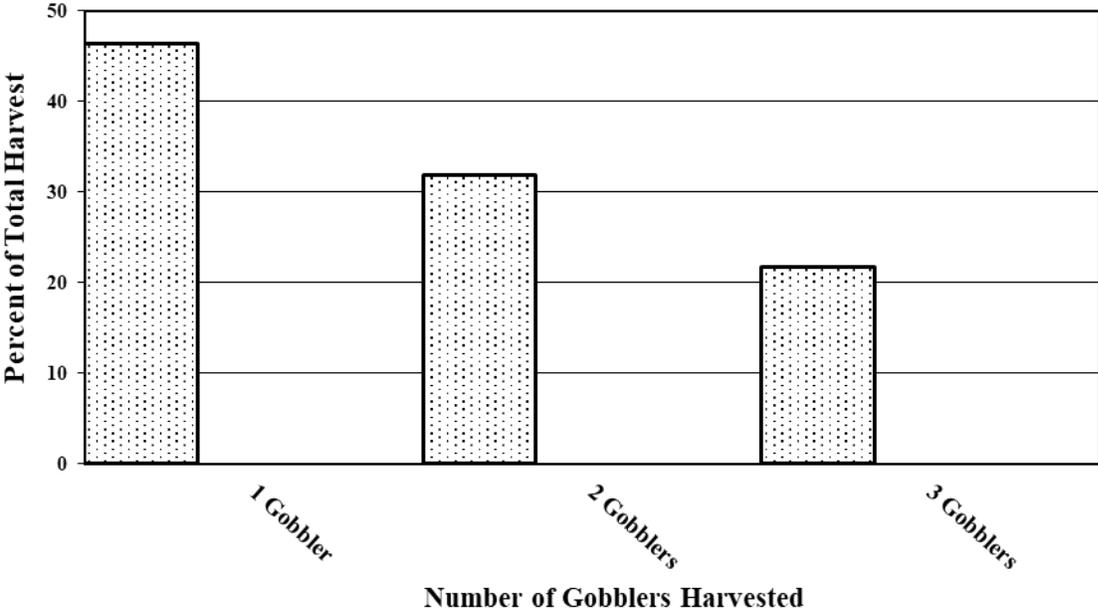


Figure 8. Relative contribution to the total turkey harvest by hunters taking between 1 and 3 gobblers in South Carolina in 2022.



2022 SC WILD TURKEY SUMMER SURVEY

Annually since the early 1980's, the S.C. Department of Natural Resources (SCDNR) has conducted a Summer Turkey Survey to estimate reproduction and recruitment of wild turkeys in South Carolina. The survey involves agency wildlife biologists, technicians, and game wardens, as well as many volunteers from other natural resource agencies and the general public. This year approximately 180 participants recorded 987 unique observations, seeing approximately 5,600 turkeys across the state in July and August. Although wild turkeys nest primarily in April and May in South Carolina, the survey does not take place until late summer. Therefore, the survey statistics document poults (young turkeys) that survived and entered the fall population (Table 1).

Wild turkey productivity is assessed by observations of reproduction and associated survival of offspring being recruited into the population. This measure of young entering the population based on the number of hens in the population is the Total Recruitment Ratio (TRR). This annual index is the most practical measure of productivity because it considers successful hens, unsuccessful hens, and poult survival. Recruitment of four or more poults per hen is considered excellent, three is good, two is fair and considered a break-even point, and one or less poults per hen is poor. If hens are successful at some level, a turkey population can be maintained. However, the goal is to optimize conditions through management applications to promote optimal reproductive success and turkey populations that provide sustainable, quality turkey hunting opportunities into the future. Unlike deer, wild turkeys are much more susceptible to significant fluctuations in reproduction and recruitment. Lack of reproductive success is often associated with bad weather (cold and wet) during nesting and brood rearing season. However, there are a host of predators that take advantage of turkey nests and broods including: raccoons, opossums, skunks, armadillos, snakes, foxes, coyotes, bobcats, feral hogs, and numerous avian predators including hawks, owls, and crows.

South Carolina has experienced declines in turkey productivity since 1988. Average recruitment prior to 1988 was 3.5 poults per hen. Average recruitment since 1988 has been 2.1, representing a 40 percent decrease in average recruitment. Coincidentally, the turkey harvest has decreased over 40 percent since it peaked in 2002. This has been a slow and steady decline with TRR numbers in the 1990's averaging 2.5, but since 2005 numbers below 2.0 have been the norm with an average TRR the last 15 years of 1.8 (Figure 2). Long term average TRR figures consistently below 2.0 are indicative of a shrinking population. This year's statewide TRR was 1.3, matching the all-time low seen in 2013. For hens that successfully raise a brood, average brood sizes of 3.5 to 4 poults have remained consistent over time. However, the driving factor in the low productivity is the high percentage of hens that have no poults at all by late summer. Sixty-four (64) percent of hens observed this summer had no poults and that figure has averaged 56% the last five years (Table 2). Hens without poults are considered unsuccessful and either did not attempt to nest, abandoned their nest, lost their nest to predation or human disturbance, or had no poults survive due to predation, exposure, starvation, disease, or flooding.

It is also worth noting that turkeys have high reproductive potential and are normally able to maintain populations despite predation and weather-related factors. Predators and periodic poor weather conditions existed prior to the year 2000 so this more recent and prolonged poor success may be tied to a high number of hens that did not breed successfully or poor fitness, vigor and survival of poults due to genetics, disease, other environmental factors or large-scale changes in habitat. Continued research, surveys and attention to season timing, bag limits and other potential contributing factors is warranted.

Both short- and long-term fluctuations up and down are not unexpected given the reproductive strategy of turkeys and the multiple factors that influence their success and survival. This inherent instability is the reason that annual monitoring is critical for this species. Anyone interested in participating in the annual Summer Turkey Survey is encouraged to sign-up. The survey period is July 1-August 29 annually and those who participate typically spend a reasonable amount of time outdoors during that period. Cooperators obviously must be able to identify wild turkeys and must be comfortable in telling the difference between hens, poult, and gobblers. If you would like to participate in the survey, contact Jay Cantrell at cantrellj@dnr.sc.gov. You will be added to the cooperator list and receive materials at the end of June annually. Those interested in the survey can also download instructions and survey forms at the following website: <http://www.dnr.sc.gov/wildlife/turkey/volunbroodsurvey.html>

Figure 1. Map of physiographic regions for 2022 Summer Turkey Survey.

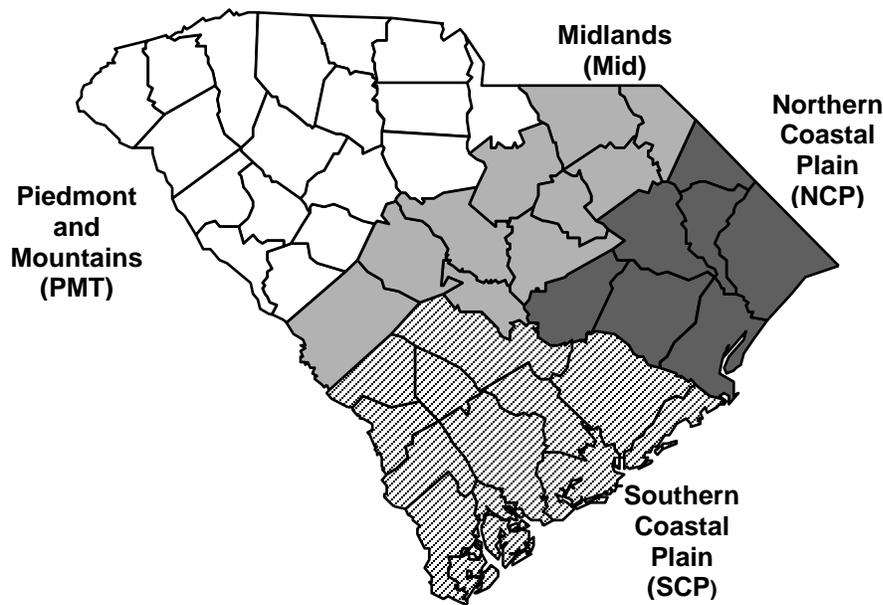


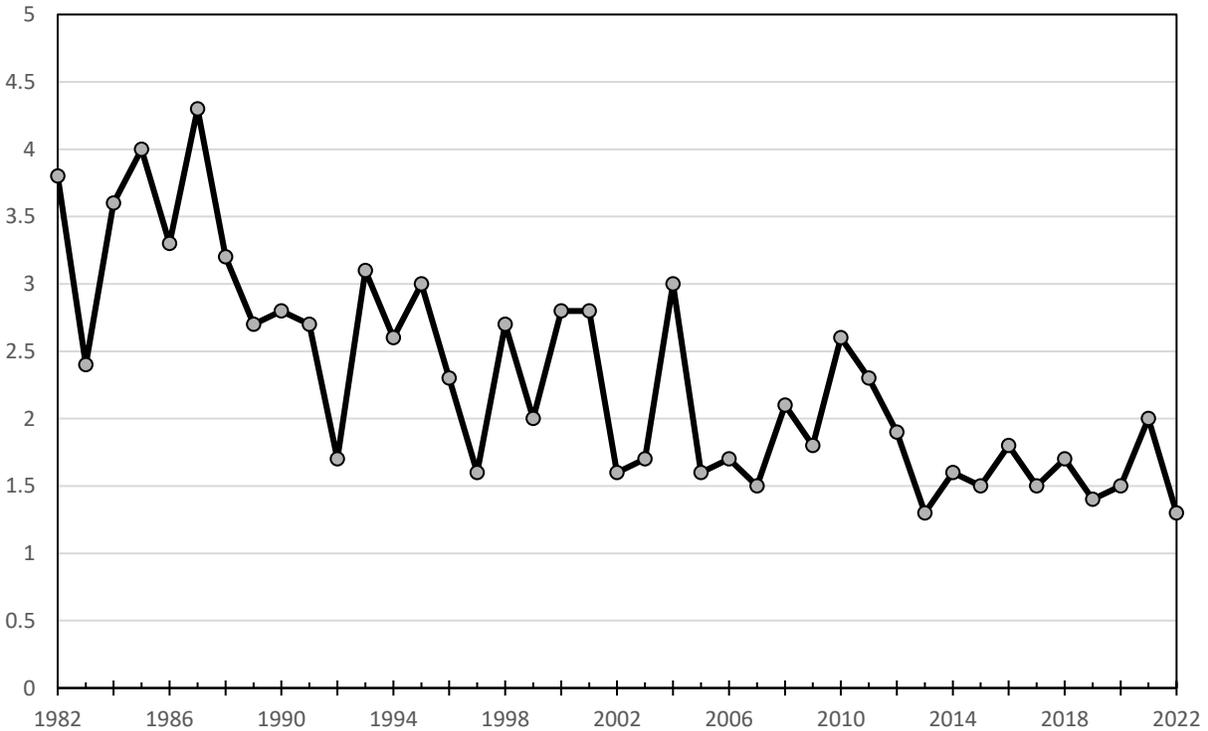
Table 1. Summary of reproductive data for 2022 Summer Turkey Survey by region.

Region	Gobbler/ Hen Ratio	No. Hens w/Poults	No. Hens w/o Poults (%)	No. Poults	Avg. Brood Size	Total Recruitment Ratio
Piedmont & Mtns	0.54	278	468 (63)	966	3.5	1.3
Midlands	0.65	145	227 (61)	504	3.5	1.4
Northern Coastal	0.58	71	146 (67)	266	3.8	1.2
Southern Coastal	0.73	162	321 (67)	554	3.4	1.2
Statewide	0.62	656	1162 (64)	2290	3.5	1.3

Table 2. Statewide Summer Turkey Survey reproductive data 2018-2022.

Year	Gobbler/ Hen Ratio	No. Hens w/Poults	No. Hens w/o Poults (%)	No. Poults	Avg. Brood Size	Total Recruitment Ratio
2018	0.62	1,076	1,206 (53)	3,948	3.7	1.7
2019	0.62	728	1,173 (62)	2,670	3.7	1.4
2020	0.54	807	1,225 (60)	2,971	3.7	1.5
2021	0.54	976	978 (50)	3,966	4.1	2.0
2022	0.62	656	1162 (64)	2,290	3.5	1.3
Average	0.59	897	1,149 (56)	3,169	3.7	1.6

Figure 2. Summer wild turkey recruitment ratio in South Carolina 1982-2022.



SUMMARY OF CURRENT WILD TURKEY RESEARCH IN SOUTH CAROLINA

SCDNR is contributing funding and cooperating on a study entitled “Reproductive Ecology of Wild Turkeys in an Unhunted Population.” This is a joint project between SCDNR, USDA Forest Service-Southern Research Station, University of Georgia, Louisiana State University, and University of Missouri. This research is occurring on the Savannah River Site (SRS) and is focused on evaluating reproductive ecology of a population of wild turkeys not exposed to hunting. Specific objectives include:

1. Determining space use, habitat selection, and survival of male and female wild turkeys
2. Assessing nesting and brooding ecology of female wild turkeys, with a focus on thoroughly describing nesting chronology and behavior of females during laying, incubating, and brooding.
3. Describing vegetative and habitat characteristics associated with nest sites and areas used by brooding females.
4. Spatially and temporally describing gobbling activity and relating gobbling activity to nesting chronology of females and movement ecology of males.
5. Evaluating the genetic mating system of wild turkeys and describe patterns of parentage in clutches of females.

These research objectives have been studied on several other study sites across the Southeast in recent years on populations subjected to hunting (i.e. the recent SCDNR funded project at the Webb Wildlife Center). By conducting parallel research on an unhunted population, we will be able to better assess the impacts of hunting on wild turkeys.

To date, over 200 birds have been captured and banded. Approximately 190 of these birds were marked with GPS transmitters. Overall nest initiation rates are averaging about 90 percent with 35 percent initial nest success and 60 percent brood survival. All of these measures are greater than the 2014-2018 Webb Center study in South Carolina and a number of other hunted study sites in the southeast. This project will continue until 2025 and findings will be provided as they become available.

SCDNR is cooperating on a project to assess the diet of coyotes in South Carolina through non-invasive genetic sampling and DNA metabarcoding. This study is part of a larger coyote abundance estimation project underway with the University of Georgia and Savannah River Ecology Lab, using coyote fecal samples collected from sites across South Carolina during deer fawning and turkey nesting and brood rearing season. Overall, we found evidence that two species, coyote and bobcat, consumed deer while all three consumed turkeys. Frequency of deer in the diet varied across sites for coyotes from 62 – 86% and wild turkey was present with a frequency of occurrence of 9% for coyotes, 5% for bobcats, and 14% for gray fox. This low presence of turkey in coyote scat and specialization in other prey species indicate that turkeys are likely not an important component of diet to coyotes.